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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,498	08/04/2006	Chikara Ishikawa	1303.46433X00	9220
20457 7590 07/31/2007 ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873			EXAMINER HAMILTON, CYNTHIA	
			ART UNIT 1752	PAPER NUMBER
			NOTIFICATION DATE 07/31/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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dprater@antonelli.com
tsampson@antonelli.com

Office Action Summary

Application No.

10/588,498

Applicant(s)

ISHIKAWA ET AL.

Examiner

Cynthia Hamilton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/4/6, 12/28/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 8/4/6, 12/28/06
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

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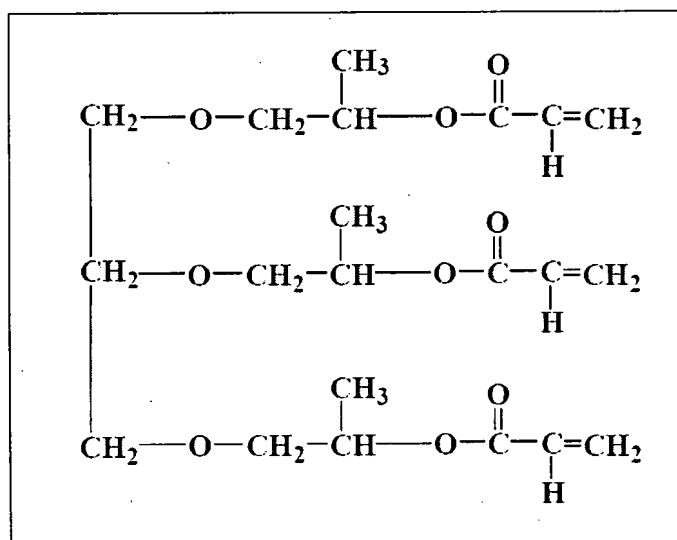
DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 8, 10 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Adams et al as evidenced by Sartomer product Bulletin SR9020, Propoxylated (3) glycerol triacrylate. With respect to instant claims 1-2, 10 and 13, the Preparation c composition anticipates applicants compositions of instant claims 1-2 and the Example 3 of col. 9 of Adams et al disclose a dip coated printed circuit board which anticipates the photosensitive element of claim 10 and the composition of Allen in Example 3 is inherently possessed of an ultraviolet light transmittance within the range of 5-75% at a wavelength of 365 nm. The glyceryl propoxy triacrylate, Sartomer SR 9020, is identified by Sartomer product Bulletin SR9020 as reproduced below



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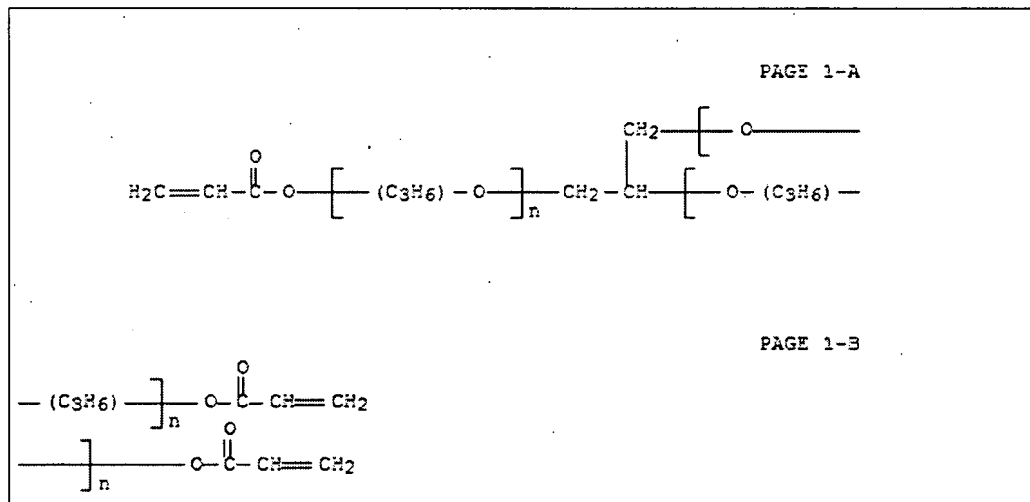
to be a species of instant component B. "A generic claim cannot be allowed to an applicant if the prior art discloses a species falling within the claimed genus." The species in that case will anticipate the genus. *In re Slayter*, 276 F.2d 408, 411, 125 USPQ 345, 347 (CCPA 1960); *In re Gosteli*, 872 F.2d 1008, 10 USPQ2d 1614 (Fed. Cir. 1989). With respect to claim 8, the examiner notes with respect to Adams et al and Preparation C, that the percentage of binder in binder + monomer the binder is 70 parts by weight when considering only 46% weight of the latex is binder polymer, leaving the monomer being 30 parts with the photoinitiator being 5 parts with monomer and binder being 100 parts by weight.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2 and 8-10 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Hawkins et al (5,314,789) as evidenced by RN 52408-84-1. With respect to claims 1-2 and 8-10, the compositions and coated elements of Examples 3 and 8 anticipate the instant compositions and elements wherein Photomer 4094 as evidenced by RN 52408-84-1 is a species of instant B. the structure of RN 52408-84-1 is reproduced below:

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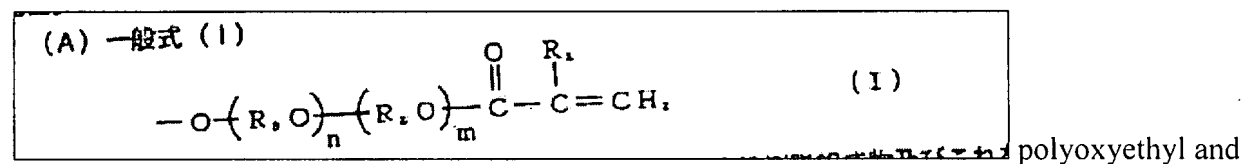


“A generic claim cannot be allowed to an applicant if the prior art discloses a species falling within the claimed genus.” The species in that case will anticipate the genus. *In re Slayter*, 276 F.2d 408, 411, 125 USPQ 345, 347 (CCPA 1960); *In re Gosteli*, 872 F.2d 1008, 10 USPQ2d 1614 (Fed. Cir. 1989). The compositions of Hawkins et al are is inherently possessed of an ultraviolet light transmittance within the range of 5-75% at a wavelength of 365 nm thus anticipating instant invention of applicants claim 13 as well. With respect to claim 8, the examiner notes with respect to Hawkins et al and Example 3, that the percentage of binder in binder + monomer the binder is 61 parts by weight, leaving the monomer being 39 parts with the photoinitiator being 8.3 parts with monomer and binder being 100 parts by weight. With respect to instant claim 9, the Photomer 4094 is about 50 wt% of the monomer used by Hawkins in the composition of Example 3.

5. Claims 1-8 and 10-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hitachi Chemical Co. Ltd. (JP 6-242603 A) as evidenced by the Written opinion form PCT /ISA/237 filed by applicants on February 28, 2006 and by English translation of JP, 06-242603, A (1994) from machine translation from AIPN Japan Patent Office . With respect to JP 6-242603

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A, due to the poor translation of this document by machine, it has been submitted for full translation. The rejection is based upon what is now cited. The examiner was unable to fully understand what was in the examples of JP 6-242603 A by the machine translation, so for this reason, she has only presented a rejection under 35 U.S.C. 103(a). With respect to instant claims 1-8 and 10-20, Hitachi Chemical Co. Ltd. teaches the instant composition and element as well as process with the exception of an explicit example comprised of the instant Chemical Formula 5. However, in claim 1 of Hitachi Chemical Co. Ltd. the use of monomers with both polypropoxy and polyethyloxy groups part of an acrylate or methacrylate monomer combined with a film forming polymer, i.e. binder, and a photoinitiator is taught as well as in claims 4-5 of Hitachi Chemical Co. Ltd. the composition between base film and cover film wherein the cover film exfoliates. In [0001] the use of the element is for printed wiring board creation. In [0005] the 'ethylene nature' is given by Hitachi Chemical Co. Ltd. as known to improve detachability but the 'ethylene nature' worsens the resist and does not provide enough flexibility or metal-plating-proof, yielding scum, tenting problems and developability problems in alkaline developers leading to problems of short circuiting and disconnection in the printed circuit formed therefrom. The Solution to the problem set forth by Hitachi Chemical Co. Ltd. was to make use of the



polyoxypropyl groups in the same monomer set forth in [0007] and [0009]. The examples of this monomer are given in paragraph [0010] of Hitachi Chemical Co. Ltd. The Written opinion

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cited by applicants states the following about this paragraph:

Also, paragraph 0010 of document 2 describes using “glycerylpolyethoxypolypropoxytri(meta)acrylate” as the photopolymerizable compound contained in the photosensitive layer, and paragraph 0009 of document 2 describes the pc that the sum of m and n is 2-10. Therefore, setting the number of repetitions of the ethox group and the propoxy group in “glycerylpolyethoxypolypropoxytri(meta)acrylate” to va like those shown in claims 1, 3, and 6 would be an obvious matter to a person skilled in t art.

The machine translation does not make clear the

“glycerylpolyethoxypolypropoxytri(meta)acrylate” but does reference “glyceryl

...propoxy ... acrylate... as an example. In view of the translation in the Written opinion and the presence of propoxy and acrylate and glycerl in the Machine translation, the examiner believes that the use of polyoxyethylated and polyoxypropylated glycerol tri (meth) acrylates are monomers made obvious by the disclosure of Hitachi Chemical Co. Ltd for use in their compositions, laminates and processes for forming printed circuit boards as set forth in [0012] to [0023] and the examples. The polyethylene film used as cover layer was 35 micrometers thick and the support was 23 micrometers thick as set forth in [0033]. The process is set forth in [0036]. The coverlayer must be exfoliate, i.e. peel off, as set forth in [0021], thus have sufficient strength to do so which is the same reason for the strength set forth by applicants in their specification and the base film must transparent to allow imaging there through but strong enough to hold the laminate together for storage before use. Thus, there must be as little haze as possible to obtain transparency sufficient for imaging. Thus, the use of any of the examples of Hitachi Chemical Co. Ltd monomers in their laminates and processes to form printed circuit plates with sufficient flexibility, adhesion, developability and plating resistance while avoiding

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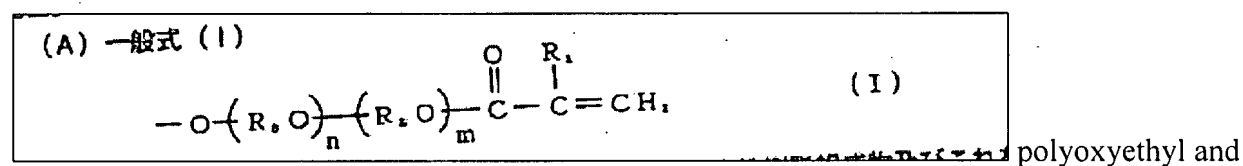
scumming problems would have been prima facie obvious to produce printed circuit boards with as few problems with short circuiting as possible. The balancing of these properties with respect to the amount of propoxy and ethoxy groups would have been prima facie obvious within the parameters set forth by Hitachi Chemical Co. Ltd.

6. Claims 1-3, 6, 8, 10 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated Fuji Photo Film Co. LTD (JP -05-34901 A) as evidenced by English translation of JP, 05-034901, A (1993) from machine translation from AIPN Japan Patent Office. With respect to instant claims 1-3, 6, 8, 10 and 14, Example F making use of IV in the Table 1 under [0021] as shown on page 4 of the Japanese document and translated in description, reads on the instant Chemical Formula 5 of applicants claim 1. It is the IV in [0022]. The compositions in the example are coated on a substrate and covered with a silicone resin layer. Thus, the three layer element reads on the instant elements of 10 and 14. The examiner notes that there is no indication in Fuji Photo Film Co. LTD of cover layers for peeling off upon a lamination step.

7. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pilette et al (US 4, 378,264) in view of Cohen et al (US 3,380,831) further in view of Hitachi Chemical Co. Ltd. (JP 6-242603 A) as evidenced by the Written opinion form PCT /ISA/237 filed by applicants on February 28, 2006 and by English translation of JP, 06-242603, A (1994) from machine translation from AIPN Japan Patent Office .. With respect to instant claims 1-20, Pilette et al teach all of the instant invention with the exception of specific monomers, specific properties of haze and tensile strength in the separate layers. IN Pilette et al see particularly col. 3, lines 65 to col. 5, lines 24, and col.7, lines 51. The monomer to be selected by Pilette et al is set forth in col. 6, starting in line 11 and is inclusive of glycerol triacrylate and the compounds

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disclosed in US Patent No. 3,380,831, i.e. Cohen et al. In col. 3 of Cohen et al, the branched polyolpolyesters inclusive of the acrylates of butoxylated and/or propoxylated and/or ethoxylated polyols inclusive of glycerol are disclosed. Thus, with respect to instant claims 1-20, the use of any of these monomers set forth by Cohen et al would have been prima facie obvious in their laminates and methods. With respect to instant claim 9, Cohen disclose mixing the diarylate monomers with the acrylates of butoxylated and/or propoxylated and/or ethoxylated polyols. With respect to using mixed polyethoxylated polypropoxylated monomers in the laminates of Cohen et al, In [0005] the 'ethylene nature' is given by Hitachi Chemical Co. Ltd. as known to improve detachability but the 'ethylene nature' worsens the resist and does not provide enough flexibility or metal-plating-proof, yielding scum, tenting problems and developability problems in alkaline developers leading to problems of short circuiting and disconnection in the printed circuit formed therefrom. The Solution to the problem set forth by Hitachi Chemical Co. Ltd. was to make use of the



polyoxypropyl groups in the same monomer set forth in [0007] and [0009]. The examples of this monomer are given in paragraph [0010] of Hitachi Chemical Co. Ltd. The Written opinion

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cited by applicants states the following about this paragraph:

Also, paragraph 0010 of document 2 describes using “glycerylpolyethoxypolypropoxytri(meta)acrylate” as the photopolymerizable compound contained in the photosensitive layer, and paragraph 0009 of document 2 describes the pc that the sum of m and n is 2-10. Therefore, setting the number of repetitions of the ethox group and the propoxy group in “glycerylpolyethoxypolypropoxytri(meta)acrylate” to va like those shown in claims 1, 3, and 6 would be an obvious matter to a person skilled in t art.

The machine translation does not make clear the

“glycerylpolyethoxypolypropoxytri(meta)acrylate” but does reference “glyceryl

....propoxy ... acrylate... as an example. In view of the translation in the Written opinion and the presence of propoxy and acrylate and glyceryl in the Machine translation, the examiner believes that the use of polyoxyethylated and polyoxypropylated glycerol tri (meth) acrylates is made clear. Thus, the use of such monomers as in Hitachi et al as the monomers within the scope of Cohen et al for the laminates of Pilette et al would have been prima facie obvious to maximize resolution of the resists, as well as avoid short circuit problems by improving flexibility, toughness and reducing the scum left upon development. The use of a monomer of polyethoxylated trimethylolpropane triacrylate with trimethylolpropane triacrylate in Example 1 makes use of a similar compound to that of the instant claims in that there is an added methyl group, attached to the polyol. The triol varies by one CH₃ unit only. Thus, the combination of monomers is made and the laminate is made with a polyethylene terephthalate web of 12.7 micrometers but no cover film. However, the cover film is an optional component taught by Pilette et al in lines 15-21 of col. 5 and cited as especially useful was 25 micrometer thick polyethylene film which would inherently be required to be peelable thus of sufficient strength to

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be peeled as required by applicants. The substrate is addressed by Pilette et al in col. 4, lines 44-46 and is also 25 micrometers and required to be transparent, i.e. as haze free as possible at the imaging wavelength. Thus, with respect to instant claims 1-20, the instant compositions, elements and methods are made prima facie obvious in view of the combined teachings of Pilette et al, Hitache et al and the cited Cohen et al.

8. Claims 1-2 and 7-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ai et al (EP 0 125 862 A2). With respect to instant claims 1-2 and 7-20, Ai et al teach all of a species of the instant invention with the exception of an explicit example wherein the instant B component is the monomer used. However, in listing on page 16, the added monomer components to the urethane acrylate oligomer in the 4-5th lines from the bottom, listed is tri(acryloxypropoxy)propane which is clearly a species within the structure of instant claims 1-2 and 7-20 for the component B and is one of the C6-14 trivalent alkoxy alkyl groups of the (F8) monomer set forth on page 16 of Ai et al. With respect to instant claims 1-2 and 7-20, the use of any of the listed compounds of Ai et al for the added monomer set forth in the third paragraph of page 15 of Ai et al would have been prima facie obvious to form the photopolymerizable laminates of Ai et al set forth in their abstract, examples, and on pages 6—7 as the up to 50 % percent monomeric component mixed with the required urethanes set forth in order to obtain a photopolymerizable lamints for use in formation of printed circuit board to improve tenting, mechanical strength and adhesion to substrate as required on page 21 of Ai et al.. In Ai et al, also see particularly page 9 , page 10 with respect to binder and molecular weight range, page 19 , bottom half with respect to weight percentages of components, page 20 second paragraph for support, page 21 for protective layer and solving tenting problems and page 22 for improving

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flexibility, page 29 for the use of 20 micrometer substrates and 25 micrometer coverlayers requiring the ability to be peeled and with respect to the substrate transparent enough for exposure purposes.

9. Claims 16-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicants in claims 16-17 have referenced tensile strength of the protective films then supported the method of obtaining such numbers with in [0085] and JIS C 2318-1997 (5.3.3) STANDARD. Since understanding what kind of tensile strength is being tested is essential to the enablement of the claims, the support for such a measurement is non enabling for the essential step of determining what the limit of these claims is addressing. As shown by "Designing With Thermoplastics" from Dow plastics, tensile strength can be tensile yield strength, Ultimate Tensile strength. Applicants have not made clear what tensile strength is being measured and such is essential for the claim language. Thus, the claimed invention is not enabled.

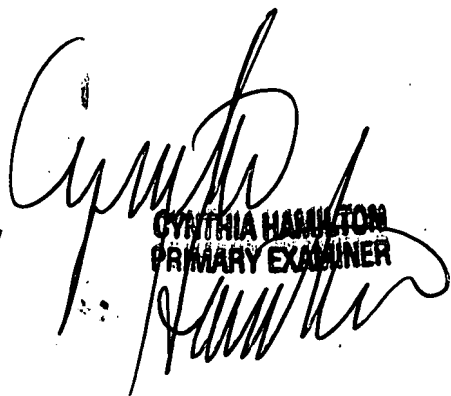
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Hamilton whose telephone number is 571-272-1331. The examiner can normally be reached on Monday through Friday 9:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on (571) 272-0729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

July 23, 2007



CYNTHIA HAMILTON
PRIMARY EXAMINER

Cynthia Hamilton
Primary Examiner
Art Unit 1752